Alpha Magnetic Spectrometer
NASA / DOE

Alpha Magnetic Spectrometer
Weekly Reports

May 27, 2005

National Aeronautics and
Space Administration

Upcoming Events:

- CAB Thermal Design Review – May 30-31 – Madrid, Spain
- Flight Vacuum Case Delivery (on dock at STADCO) – June 15, 2005
- Technical Electronics Meeting (TEM) @ CSIST – June 7-11 – Taiwan
- STA Vacuum Case Delivery (on dock at STADCO) – June 30, 2005 (subject to weld inspection and review)
- AMS General Technical Interchange Meeting (TIM) with Phase II Safety Review Dry Run – July 25-29, 2005 – Geneva (CERN)
- AMS-02 Phase II Safety Review – Date TBD (Schedule under review) – JSC

Upcoming Tests:

- High Rate Data Link (HRDL) Tests @ ISS Systems Integration Laboratory – July 2005 – JSC, Houston
- Interface Plate Static Test – Date TBD – Location TBD
- Lower Joint Static Test – Date TBD – Location TBD
- STA Sine Sweep Test – January 2006 – INFN, Terni, Italy
- STA Acoustic Test – April 2006 – ESTEC, Noordwijk, Netherlands
- Full Assembly Modal & Static Tests – May 2006 – IABG, Munich, Germany

Vacuum Case Activity at STADCO:

- The pump down and out-gassing of the Flight Vacuum Case (VC) is continuing at STADCO. After initializing the pump down, the vacuum levels stabilized at approximately 5 X 10^{-6} torr, which does not meet the established acceptance criteria. In an attempted to reach the required level, STADCO personnel ran several out-gassing cycles (pump down, close off VC, pump down again) without success. After several failed attempts, someone from the test company discovered that the turbo pump had been turned off sometime over the weekend. After it the turbo pump was switched on, the vacuum level quickly fell into the high 10^{-7} level. A preliminary leak check of all joints was conducted and no leaks were found. Two more out-gassing cycles will be run before the rate-of-rise test is conducted on May 31. Official leak checks should be completed by June 3.
- Work is continuing on the assembly and installation of the Structural Test Article (STA) VC into the weld fixture. Installation is expected to be completed by June 3.

- The repairs made to correct the unacceptable porosity of the VC First Article weld were removed and the First Article was re-welded. X-ray and dye penetrant inspections are scheduled for the week of May 30, pending completion of the ultrasonic inspection. Ultrasonic inspections are taking a longer than expected due to the amount of porosity in the weld. Inspection of the welds on the actual VCs is not expected to take as long, since the cause of the porosity was determined and will be minimized on the VC welds.

- Ultrasonic inspections (0° & 60°) are being conducted on the eight areas were the tensile samples will be removed. This will allow STADCO to remove the samples the week of May 30 when the Jacobs Sverdrup (JS) inspector will not be available.

- Work is continuing on the compiling of the Acceptance Data Package (ADP) for the Flight VC. The Acceptance Review for the flight unit is scheduled for June 15, 2005.

- While at STADCO, the ESCG VC Lead witnessed an accident, and as a witness, will be involved with the investigation. A piece of hardware (not a part of the VC Contract) was being lifted with a crane for installation onto a Vertical Turning Lathe (VTL). The approximately 2500 pound article was lifted with C-clamps at three locations around its perimeter. The work was being performed approximately 20 feet away from the Flight VC and the VC Lead. One of the C-clamps came loose and the entire part fell about five feet to the ground. One of the C-clamps flew in the direction of the VC and landed about four feet from the VC Lead. Fortunately, there were no injuries to personnel and no VC hardware was damaged in the accident. As a result, STADCO had a safety stand down and an investigation was initiated.

Avionics:

- Work is continuing on action items from the AMS-02 Power Distribution System (PDS) Critical Design Review (CDR).
    - A presentation detailing problems with the PDS delivery schedule, and possible solutions was presented to the JSC AMS Project Office (APO) Project Manager and was approved. The recommendations will next be presented to the AMS Principle Investigator.
    - A top level schematic detailing bonding and grounding for the AMS-02 Payload is in review.
    - The under-voltage problem associated with the Space Station Remote Manipulator System (SSRMS) was successfully resolved, which means that the PDS and the heaters will not require a redesign.

- The derating list for materials and components used in the building of the AMS-02 integration cables was delivered to the JSC EEE parts organization for review.

Structural Analysis:

- Work is continuing on the issues regarding the NSTS 08307 bolt analysis. The ESCG AMS Team has received the bolt analysis results from the majority of the AMS detector groups. These results are being compiled with the analyses from the Payload Integration Hardware (PIH) for presentation to the JSC

Structural Engineering Division (ES). The formal presentation and the summary table are in work. A tentative date for the meeting with ES is set for the week of June 13. This date could change due to the ES representative's current work and travel schedule.

- The fracture and stress tables required for the Phase II Safety Review are being compiled and finalized. Outstanding issues regarding needed clarifications or additional required analysis is being coordinated between ESCG and the individual detector groups.